Facility: **DAVIS-BESSE NUCLEAR POWER STATION** Date of Exam: **FEBRUARY 7-18, 2022**

Tier	Group	RO K/A Category Points												SRO-Only Points						
		K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G*	Total	A2		G*		Total		
1. Emergency and Abnormal Plant Evolutions	1	3	2	3	N/A			4	3	N/A		3	18	3		3		6		
	2	2	2	2				1	1			1	9	2		2		4		
	Tier Totals	5	4	5				5	4			4	27	5		5		10		
2. Plant Systems	1	2	2	3	3	2	2	3	3	3	3	2	28	3		2		5		
	2	1	0	1	1	1	1	1	2	1	0	1	10	0	1	2		3		
	Tier Totals	3	2	4	4	3	3	4	5	4	3	3	38	4		4		8		
3. Generic Knowledge and Abilities Categories		1			2			3			4		10	1	2	3	4	7		
		3			3			2			2			2	2	1	2			

Note: 1. Ensure that at least two topics from every applicable K/A category are sampled within each tier of the RO and SRO-only outline sections (i.e., except for one category in Tier 3 of the SRO-only section, the "Tier Totals" in each K/A category shall not be less than two). (One Tier 3 radiation control K/A is allowed if it is replaced by a K/A from another Tier 3 category.)

2. The point total for each group and tier in the proposed outline must match that specified in the table. The final point total for each group and tier may deviate by ±1 from that specified in the table based on NRC revisions. The final RO exam must total 75 points, and the SRO-only exam must total 25 points.

3. Systems/evolutions within each group are identified on the outline. Systems or evolutions that do not apply at the facility should be deleted with justification. Operationally important, site-specific systems/evolutions that are not included on the outline should be added. Refer to Section D.1.b of ES-401 for guidance regarding the elimination of inappropriate K/A statements.

4. Select topics from as many systems and evolutions as possible. Sample every system or evolution in the group before selecting a second topic for any system or evolution.

5. Absent a plant-specific priority, only those K/As having an importance rating (IR) of 2.5 or higher shall be selected. Use the RO and SRO ratings for the RO and SRO-only portions, respectively.

6. Select SRO topics for Tiers 1 and 2 from the shaded systems and K/A categories.

7. The generic (G) K/As in Tiers 1 and 2 shall be selected from Section 2 of the K/A catalog, but the topics must be relevant to the applicable evolution or system. Refer to Section D.1.b of ES-401 for the applicable K/As.

8. On the following pages, enter the K/A numbers, a brief description of each topic, the topics' IRs for the applicable license level, and the point totals (#) for each system and category. Enter the group and tier totals for each category in the table above. If fuel-handling equipment is sampled in a category other than Category A2 or G* on the SRO-only exam, enter it on the left side of Column A2 for Tier 2, Group 2. (Note 1 does not apply). Use duplicate pages for RO and SRO-only exams.

9. For Tier 3, select topics from Section 2 of the K/A catalog and enter the K/A numbers, descriptions, IRs, and point totals (#) on Form ES-401-3. Limit SRO selections to K/As that are linked to 10 CFR 55.43.

G* Generic K/As

* These systems/evolutions must be included as part of the sample (as applicable to the facility) when Revision 3 of the K/A catalog is used to develop the sample plan. They are not required to be included when using earlier revisions of the K/A catalog.

** These systems/evolutions may be eliminated from the sample (as applicable to the facility) when Revision 3 of the K/A catalog is used to develop the sample plan.

ES-401	PWR Examination Outline							Form ES-401-2	
Emergency and Abnormal Plant Evolutions—Tier 1/Group 1 (RO)									
E/APE # / Name / Safety Function	K1	K2	K3	A1	A2	G*	K/A Topic(s)	IR	#
000007 (EPE 7; ~~BW E02&E10~~; ~~CE E02~~) Reactor Trip, Stabilization, Recovery / 1				04			EA1.04 - Ability to operate and monitor the following as they apply to a reactor trip: RCP operation and flow rates (CFR 41.7 / 45.5 / 45.6)	3.6	1
000009 (EPE 9) Small Break LOCA / 3						04-09	G2.4.9 - Knowledge of low power/shutdown implications in accident (e.g., loss of coolant accident or loss of residual heat removal) mitigation strategies. (CFR: 41.10 / 43.5 / 45.13)	3.8	3
000011 (EPE 11) Large Break LOCA / 3	01						EK1.01 - Knowledge of the operational implications of the following concepts as they apply to the Large Break LOCA: Natural circulation and cooling and reflux boiling (CFR 41.8 / 41.10 / 45.3)	4.1	4
000015 (APE 15) Reactor Coolant Pump Malfunctions / 4					10		AA2.10 - Ability to determine and interpret the following as they apply to the Reactor Coolant Pump Malfunctions (Loss of RC Flow): When to secure RCPs on loss of cooling or seal injection (CFR 43.5 / 45.13)	3.7	2
000022 (APE 22) Loss of Reactor Coolant Makeup / 2			02				AK3.02 - Knowledge of the reasons for the following responses as they apply to the Loss of Reactor Coolant Makeup: Actions contained in SOPs and EOPs for RCPs, loss of makeup, loss of charging, and abnormal charging (CFR 41.5, 41.10 / 45.6 / 45.13)	3.5	5
000026 (APE 26) Loss of Component Cooling Water / 8				05			AA1.05 - Ability to operate and / or monitor the following as they apply to the Loss of Component Cooling Water: The CCWS surge tank, including level control and level alarms, and radiation alarm (CFR 41.7 / 45.5 / 45.6)	3.1	6
000027 (APE 27) Pressurizer Pressure Control System Malfunction / 3		03					AK2.03 - Knowledge of the interrelations between the Pressurizer Pressure Control Malfunctions and the following: Controllers and positioners (CFR 41.7 / 45.7)	2.6	7
000029 (EPE 29) Anticipated Transient Without Scram / 1					06		EA2.06 - Ability to determine or interpret the following as they apply to an ATWS: Main turbine trip switch position indication (CFR 43.5 / 45.13)	3.8	8
000038 (EPE 38) Steam Generator Tube Rupture / 3						01-29	G2.1.29 - Knowledge of how to conduct system lineups, such as valves, breakers, switches, etc. (CFR: 41.10 / 45.1 / 45.12)	4.1	9
000040 (APE 40; ~~BW E05~~; ~~CE E05~~; ~~W E12~~) Steam Line Rupture—Excessive Heat Transfer / 4	05						AK1.05 - Knowledge of the operational implications of the following concepts as they apply to Steam Line Rupture: Reactivity effects of cooldown (CFR 41.8 / 41.10 / 45.3)	4.1	10
000054 (APE 54; ~~CE E06~~) Loss of Main Feedwater /4			05				AK3.05 - Knowledge of the reasons for the following responses as they apply to the Loss of Main Feedwater (MFW): HPI/PORV cycling upon total feedwater loss (CFR 41.5,41.10 / 45.6 / 45.13)	4.6	11
000055 (EPE 55) Station Blackout / 6				04			EA1.04 - Ability to operate and monitor the following as they apply to a Station Blackout: Reduction of loads on the battery (CFR 41.7 / 45.5 / 45.6)	3.5	12
000056 (APE 56) Loss of Offsite Power / 6					81		AA2.81 - Ability to determine and interpret the following as they apply to the Loss of Offsite Power: S/G level meter scale and pressure gauge (CFR: 43.5 / 45.13)	3.7	13
000058 (APE 58) Loss of DC Power / 6						04-35	G2.4.35 - Knowledge of local auxiliary operator tasks during an emergency and the resultant operational effects. (CFR: 41.10 / 43.5 / 45.13)	3.8	14
000062 (APE 62) Loss of Nuclear Service Water / 4			02				AK3.02 - Knowledge of the reasons for the following responses as they apply to the Loss of Nuclear Service Water: The automatic actions (alignments) within the nuclear service water resulting from the actuation of the ESFAS (CFR 41.4, 41.8 / 45.7)	3.6	15
000065 (APE 65) Loss of Instrument Air / 8				04			AA1.04 - Ability to operate and / or monitor the following as they apply to the Loss of Instrument Air: Emergency air compressor (CFR 41.7 / 45.5 / 45.6)	3.5	16
000077 (APE 77) Generator Voltage and Electric Grid Disturbances / 6	01						AA1.01 - Knowledge of the operational implications of the following concepts as they apply to Generator Voltage and Electric Grid Disturbances: Definition of terms: volts, watts, amps, VARs, power factor (CFR: 41.4, 41.5, 41.7, 41.10 / 45.8)	3.3	17
(W E04) LOCA Outside Containment / 3							NOT APPLICABLE	-	-

(W E11) Loss of Emergency Coolant Recirculation / 4							NOT APPLICABLE	-	-
(BW E04; ~~W E05~~) Inadequate Heat Transfer— Loss of Secondary Heat Sink / 4		02					EK2.2 - Knowledge of the interrelations between the (Inadequate Heat Transfer) and the following: Facility*s heat removal systems, including primary coolant, emergency coolant, the decay heat removal systems, and relations between the proper operation of these systems to the operation of the facility. (CFR: 41.7 / 45.7)	4.2	18
K/A Category Totals:	3	2	3	4	3	3	Group Point Total:		18

ES-401	PWR Examination Outline							Form ES-401-2	
Emergency and Abnormal Plant Evolutions—Tier 1/Group 2 (RO)									
E/APE # / Name / Safety Function	K1	K2	K3	A1	A2	G*	K/A Topic(s)	IR	#
000001 (APE 1) Continuous Rod Withdrawal / 1								-	-
000003 (APE 3) Dropped Control Rod / 1								-	-
000005 (APE 5) Inoperable/Stuck Control Rod / 1								-	-
000024 (APE 24) Emergency Boration / 1	02						AK1.02 - Knowledge of the operational implications of the following concepts as they apply to Emergency Boration: Relationship between boron addition and reactor power (CFR 41.8 / 41.10 / 45.3)	3.6	19
000028 (APE 28) Pressurizer (PZR) Level Control Malfunction / 2								-	-
000032 (APE 32) Loss of Source Range Nuclear Instrumentation / 7								-	-
000033 (APE 33) Loss of Intermediate Range Nuclear Instrumentation / 7			01				AK3.01 - Knowledge of the reasons for the following responses as they apply to the Loss of Intermediate Range Nuclear Instrumentation: Termination of startup following loss of intermediate range instrumentation (CFR 41.5,41.10 / 45.6 / 45.13)	3.2	20
000036 (APE 36; BW/A08) Fuel-Handling Incidents / 8								-	-
000037 (APE 37) Steam Generator Tube Leak / 3								-	-
000051 (APE 51) Loss of Condenser Vacuum / 4								-	-
000059 (APE 59) Accidental Liquid Radwaste Release / 9		01					AK2.01 - Knowledge of the interrelations between the Accidental Liquid Radwaste Release and the following: Radioactive-liquid monitors (CFR 41.7 / 45.7)	2.7	21
000060 (APE 60) Accidental Gaseous Radwaste Release / 9								-	-
000061 (APE 61) Area Radiation Monitoring System Alarms / 7								-	-
000067 (APE 67) Plant Fire On Site / 8								-	-
000068 (~~APE 68~~; BW A06) Control Room Evacuation / 8				02			AA1.2 - Ability to operate and / or monitor the following as they apply to the (Shutdown Outside Control Room): Operating behavior characteristics of the facility. (CFR: 41.7 / 45.5 / 45.6)	3.2	22
000069 (APE 69; ~~W E14~~) Loss of Containment Integrity / 5					01		AA2.01 - Ability to determine and interpret the following as they apply to the Loss of Containment Integrity: Loss of containment integrity (CFR: 43.5 / 45.13)	3.7	23
000074 (EPE 74; ~~W E06 & E07~~) Inadequate Core Cooling / 4						04-06	G2.4.6 - Knowledge of EOP mitigation strategies. (CFR: 41.10 / 43.5 / 45.13)	3.7	24
000076 (APE 76) High Reactor Coolant Activity / 9								-	-
000078 (APE 78*) RCS Leak / 3								-	-
(W E01 & E02) Rediagnosis & SI Termination / 3							NOT APPLICABLE	-	-
(W E13) Steam Generator Overpressure / 4							NOT APPLICABLE	-	-
(W E15) Containment Flooding / 5							NOT APPLICABLE	-	-
(W E16) High Containment Radiation /9							NOT APPLICABLE	-	-
(BW A01) Plant Runback / 1	02						AK1.2 - Knowledge of the operational implications of the following concepts as they apply to the (Plant Runback): Normal, abnormal and emergency operating procedures associated with (Plant Runback). (CFR: 41.8 / 41.10 / 45.3)	3.5	25
(BW A02 & A03) Loss of NNI-X/Y/7								-	-
(BW A04) Turbine Trip / 4								-	-
(BW A05) Emergency Diesel Actuation / 6								-	-
(BW A07) Flooding / 8								-	-
(BW E03) Inadequate Subcooling Margin / 4		02					EK2.2 - Knowledge of the interrelations between the (Inadequate Subcooling Margin) and the following: Facility*s heat removal systems, including primary coolant, emergency coolant, the decay heat removal systems, and relations between the proper operation of these systems to the operation of the facility. (CFR: 41.7 / 45.7)	4.3	26

(BW E08; ~~W E03~~) LOCA Cooldown—Depressurization / 4								-	-
(BW E09; ~~CE A13~~**; ~~W E09 & E10~~) Natural Circulation/4								-	-
(BW E13 & ~~E14~~) EOP Rules and Enclosures			03				EK3.3 - Knowledge of the reasons for the following responses as they apply to the (EOP Rules): Manipulation of controls required to obtain desired operating results during abnormal, and emergency situations. (CFR: 41.5 / 41.10, 45.6, 45.13)	3.2	27
(CE A11**; W E08) RCS Overcooling—Pressurized Thermal Shock / 4							NOT APPLICABLE	-	-
(CE A16) Excess RCS Leakage / 2							NOT APPLICABLE	-	-
(CE E09) Functional Recovery							NOT APPLICABLE	-	-
(CE E13*) Loss of Forced Circulation/LOOP/Blackout / 4							NOT APPLICABLE	-	-
K/A Category Point Totals:	2	2	2	1	1	1	Group Point Total:		9

ES-401 PWR Examination Outline Form ES-401-2
Plant Systems—Tier 2/Group 1 (RO)

System # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G*	K/A Topic(s)	IR	#
003 (SF4P RCP) Reactor Coolant Pump			05									K3.05 - Knowledge of the effect that a loss or malfunction of the RCPS will have on the following: ICS (CFR: 41.7 / 45.6)	3.6	28
004 (SF1; SF2 CVCS) Chemical and Volume Control				12								K4.12 - Knowledge of CVCS design feature(s) and/or interlock(s) which provide for the following: Minimum level of VCT (Make-up Tank) (CFR: 41.7)	3.1	29
005 (SF4P RHR) Residual Heat Removal					09							K5.09 - Knowledge of the operational implications of the following concepts as they apply the RHRS: Dilution and boration considerations (CFR: 41.5 / 45.7)	3.2	30
006 (SF2; SF3 ECCS) Emergency Core Cooling						13						K6.13 - Knowledge of the effect of a loss or malfunction on the following will have on the ECCS: Pumps (CFR: 41.7 / 45.7)	2.8	31
007 (SF5 PRTS) Pressurizer Relief/Quench Tank							01	01				A1.01 - Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the PRTS controls including: Maintaining quench tank water level within Limits (CFR: 41.5 / 45.5) A2.01 - Ability to (a) predict the impacts of the following malfunctions or operations on the P S; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Stuck-open PORV or code safety (CFR: 41.5 / 43.5 / 45.3 / 45.13)	2.9 3.9	32 33
008 (SF8 CCW) Component Cooling Water									03			A3.03 - Ability to monitor automatic operation of the CCWS, including: All flow rate indications and the ability to evaluate the performance of this closed-cycle cooling system (CFR: 41.7 / 45.5)	3.0	34
010 (SF3 PZR PCS) Pressurizer Pressure Control										02	02-22	A4.02 - Ability to manually operate and/or monitor in the control room: PZR heaters (CFR: 41.7 / 45.5 to 45.8) G2.2.22 - Knowledge of limiting conditions for operations and safety limits. (CFR: 41.5 / 43.2 / 45.2)	3.6 4.0	35 36
012 (SF7 RPS) Reactor Protection	07	01										K1.07 - Knowledge of the physical connections and/or cause effect relationships between the RPS and the following systems: SDS-Steam Dump System (CFR: 41.2 to 41.9 / 45.7 to 45.8) K2.01 - Knowledge of bus power supplies to the following: RPS channels, components, and interconnections (CFR: 41.7)	3.2 3.3	37 38
013 (SF2 ESFAS) Engineered Safety Features Actuation			01									K3.01 - Knowledge of the effect that a loss or malfunction of the ESFAS will have on the following: Fuel (CFR: 41.7 / 45.6)	4.4	39
022 (SF5 CCS) Containment Cooling				03								K4.03 - Knowledge of CCS design feature(s) and/or interlock(s) which provide for the following: Automatic containment isolation (CFR: 41.7)	3.6	40
025 (SF5 ICE) Ice Condenser												NOT APPLICABLE	-	-
026 (SF5 CSS) Containment Spray							01					A1.03 - Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the CSS controls including: Containment pressure (CFR: 41.5 / 45.5)	3.9	41

039 (SF4S MSS) Main and Reheat Steam								01				A2.01 - Ability to (a) predict the impacts of the following malfunctions or operations on the MRSS; and (b) based on predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Flow paths of steam during a LOCA (CFR: 41.5 / 43.5 / 45.3 / 45.13)	3.1	42
									02			A3.02 - Ability to monitor automatic operation of the MRSS, including: Isolation of the MRSS (CFR: 41.5 / 45.5)	3.1	43
059 (SF4S MFW) Main Feedwater										12		A4.12 - Ability to manually operate and monitor in the control room: Feedwater control during power increase and decrease (CFR: 41.7 / 45.5 to 45.8)	2.9	44
061 (SF4S AFW) Auxiliary/Emergency Feedwater					01							K5.01 - Knowledge of the operational implications of the following concepts as the apply to the AFW: Relationship between AFW flow and RCS heat transfer (CFR: 41.5 / 45.7)	3.6	45
062 (SF6 ED AC) AC Electrical Distribution	02											K1.02 - Knowledge of the physical connections and/or cause-effect relationships between the ac distribution system and the following systems: ED/G (CFR: 41.2 to 41.9)	4.1	46
063 (SF6 ED DC) DC Electrical Distribution		01										K2.01 - Knowledge of bus power supplies to the following: Major DC loads (CFR: 41.7)	2.9	47
			02									K3.02 - Knowledge of the effect that a loss or malfunction of the DC electrical system will have on the following: Components using DC control power (CFR: 41.7 / 45.6)	3.5	48
064 (SF6 EDG) Emergency Diesel Generator						08						K6.08 - Knowledge of the effect of a loss or malfunction of the following will have on the ED/G system: Fuel oil storage tanks (CFR: 41.7 / 45.7)	3.2	49
073 (SF7 PRM) Process Radiation Monitoring							01					A1.01 - Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the PRM system controls including: Radiation levels (CFR: 41.5 / 45.7)	3.2	50
076 (SF4S SW) Service Water				06				01				K4.06 - Knowledge of SWS design feature(s) and/or interlock(s) which provide for the following: Service water train separation (CFR: 41.7)	2.8	51
												A2.01 - Ability to (a) predict the impacts of the following malfunctions or operations on the SWS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Loss of SWS (CFR: 41.5 / 43.5 / 45/3 / 45/13)	3.5	52
078 (SF8 IAS) Instrument Air									01			A3.01 - Ability to monitor automatic operation of the IAS, including: Air pressure (CFR: 41.7 / 45.5)	3.1	53
103 (SF5 CNT) Containment										04		A4.04 - Ability to manually operate and/or monitor in the control room: Phase A and phase B (Containment Isolation) resets (CFR: 41.7 / 45.5 to 45.8)	3.5	54
											01-31	G2.1.31 - Ability to locate control room switches, controls, and indications, and to determine that they correctly reflect the desired plant lineup. (CFR: 41.10 / 45.12)	4.6	55
053 (SF1; SF4P ICS*) Integrated Control												NOT APPLICABLE	-	-
K/A Category Point Totals:	2	2	3	3	2	2	3	3	3	3	2	Group Point Total:		28

ES-401	PWR Examination Outline Plant Systems—Tier 2/Group 2 (RO)											Form ES-401-2	
System # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G*	K/A Topic(s)	IR	#
001 (SF1 CRDS) Control Rod Drive													-	-
002 (SF2; SF4P RCS) Reactor Coolant													-	-
011 (SF2 PZR LCS) Pressurizer Level Control											01-20	G2.1.20 - Ability to interpret and execute procedure steps. (CFR: 41.10 / 43.5 / 45.12)	4.6	56
014 (SF1 RPI) Rod Position Indication													-	-
015 (SF7 NI) Nuclear Instrumentation	05											K1.05 - Knowledge of the physical connections and/or cause/effect relationships between the NIS and the following systems: ICS (CFR: 41.2 to 41.9 / 45.7 to 45.8)	3.9	57
016 (SF7 NNI) Nonnuclear Instrumentation													-	-
017 (SF7 ITM) In-Core Temperature Monitor			01									K3.01 - Knowledge of the effect that a loss or malfunction of the ITM system will have on the following: Natural circulation indications (CFR: 41.7 / 45.6)	3.5	58
027 (SF5 CIRS) Containment Iodine Removal												NOT APPLICABLE	-	-
028 (SF5 HRPS) Hydrogen Recombiner and Purge Control												NOT APPLICABLE	-	-
029 (SF8 CPS) Containment Purge				02								K4.02 - Knowledge of design feature(s) and/or interlock(s) which provide for the following: Negative pressure in containment (CFR: 41.7)	2.9	59
033 (SF8 SFPCS) Spent Fuel Pool Cooling							02					A1.02 - Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with Spent Fuel Pool Cooling System operating the controls including: Radiation monitoring systems (CFR: 41.5 / 45.5)	2.8	60
034 (SF8 FHS) Fuel-Handling Equipment													-	-
035 (SF 4P SG) Steam Generator													-	-
041 (SF4S SDS) Steam Dump/Turbine Bypass Control								02				A2.02 - Ability to (a) predict the impacts of the following malfunctions or operations on the SDS; and (b) based on those predictions or mitigate the consequences of those malfunctions or operations: Steam valve stuck open (CFR: 41.5 / 43.5 / 45.3 / 45.13)	3.6	61
045 (SF 4S MTG) Main Turbine Generator					01							K5.01 - Knowledge of the operational implications of the following concepts as the apply to the MT/G System: Possible presence of explosive mixture in generator if hydrogen purity deteriorates (CFR: 41.5 / 45.7)	2.8	62
055 (SF4S CARS) Condenser Air Removal													-	-
056 (SF4S CDS) Condensate													-	-
068 (SF9 LRS) Liquid Radwaste						10						K6.10 - Knowledge of the effect of a loss or malfunction on the following will have on the Liquid Radwaste System: Radiation monitors (CFR: 41.7 / 45.7)	2.5	64
071 (SF9 WGS) Waste Gas Disposal													-	-
072 (SF7 ARM) Area Radiation Monitoring													-	-

075 (SF8 CW) Circulating Water							02				A2.02 Ability to (a) predict the impacts of the following malfunctions or operations on the circulating water system; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Loss of circulating water pumps (CFR: 41.5 / 43.5 / 45.3 / 45.13)	2.5	65
079 (SF8 SAS**) Station Air												-	-
086 Fire Protection								02			A3.02 - Ability to monitor automatic operation of the Fire Protection System including: Actuation of the FPS (CFR: 41.7 / 45.5)	2.9	63
050 (SF 9 CRV*) Control Room Ventilation											NOT APPLICABLE	-	-
K/A Category Point Totals:	1	0	1	1	1	1	2	1	0	1	Group Point Total:		10

ES-401	PWR Examination Outline							Form ES-401-2	
Emergency and Abnormal Plant Evolutions—Tier 1/Group 1 (SRO)									
E/APE # / Name / Safety Function	K1	K2	K3	A1	A2	G*	K/A Topic(s)	IR	#
000007 (EPE 7; BW E02&E10; ~~CE E02~~) Reactor Trip, Stabilization, Recovery / 1								-	-
000008 (APE 8) Pressurizer Vapor Space Accident / 3								-	-
000009 (EPE 9) Small Break LOCA / 3					06		EA2.06 - Ability to determine or interpret the following as they apply to a small break LOCA: Whether PZR water inventory loss is imminent (CFR 43.5 / 45.13)	4.3	76
000011 (EPE 11) Large Break LOCA / 3								-	-
000015 (APE 15) Reactor Coolant Pump Malfunctions / 4						04-31	G2.4.31 - Knowledge of annunciator alarms, indications, or response procedures. (CFR: 41.10 / 45.3)	4.1	77
000022 (APE 22) Loss of Reactor Coolant Makeup / 2								-	-
000025 (APE 25) Loss of Residual Heat Removal System / 4					02		AA2.02 - Ability to determine and interpret the following as they apply to the Loss of Residual Heat Removal System: Leakage of reactor coolant from RHR into closed cooling water system or into reactor building atmosphere (CFR: 43.5 / 45.13)	3.8	78
000026 (APE 26) Loss of Component Cooling Water / 8								-	-
000027 (APE 27) Pressurizer Pressure Control System Malfunction / 3								-	-
000029 (EPE 29) Anticipated Transient Without Scram / 1								-	-
000038 (EPE 38) Steam Generator Tube Rupture / 3						02-38	G2.2.38 - Knowledge of conditions and limitations in the facility license. (CFR: 41.7 / 41.10 / 43.1 / 45.13)	4.5	79
000040 (APE 40; BW E05; ~~CE E05~~; ~~W E12~~) Steam Line Rupture—Excessive Heat Transfer / 4								-	-
000054 (APE 54; ~~CE E06~~) Loss of Main Feedwater /4								-	-
000055 (EPE 55) Station Blackout / 6								-	-
000056 (APE 56) Loss of Offsite Power / 6								-	-
000057 (APE 57) Loss of Vital AC Instrument Bus / 6						04-08	G2.4.8 - Knowledge of how abnormal operating procedures are used in conjunction with EOPs. (CFR: 41.10 / 43.5 / 45.13)	4.5	80
000058 (APE 58) Loss of DC Power / 6								-	-
000062 (APE 62) Loss of Nuclear Service Water / 4								-	-
000065 (APE 65) Loss of Instrument Air / 8								-	-
000077 (APE 77) Generator Voltage and Electric Grid Disturbances / 6					03		AA2.03 - Ability to determine and interpret the following as they apply to Generator Voltage and Electric Grid Disturbances: Generator current outside the capability curve (CFR: 41.5 and 43.5 / 45.5, 45.7, and 45.8)	3.6	81
(W E04) LOCA Outside Containment / 3							NOT APPLICABLE	-	-
(W E11) Loss of Emergency Coolant Recirculation / 4							NOT APPLICABLE	-	-
(BW E04; ~~W E05~~) Inadequate Heat Transfer—Loss of Secondary Heat Sink / 4								-	-
K/A Category Totals:	0	0	0	0	3	3	Group Point Total:		6

ES-401	PWR Examination Outline							Form ES-401-2	
Emergency and Abnormal Plant Evolutions—Tier 1/Group 2 (SRO)									
E/APE # / Name / Safety Function	K1	K2	K3	A1	A2	G*	K/A Topic(s)	IR	#
000001 (APE 1) Continuous Rod Withdrawal / 1								-	-
000003 (APE 3) Dropped Control Rod / 1						01-19	G2.1.19 - Ability to use plant computers to evaluate system or component status. (CFR: 41.10 / 45.12)	3.8	82
000005 (APE 5) Inoperable/Stuck Control Rod / 1								-	-
000024 (APE 24) Emergency Boration / 1								-	-
000028 (APE 28) Pressurizer (PZR) Level Control Malfunction / 2								-	-
000032 (APE 32) Loss of Source Range Nuclear Instrumentation / 7								-	-
000033 (APE 33) Loss of Intermediate Range Nuclear Instrumentation / 7								-	-
000036 (APE 36; BW/A08) Fuel-Handling Incidents / 8								-	-
000037 (APE 37) Steam Generator Tube Leak / 3								-	-
000051 (APE 51) Loss of Condenser Vacuum / 4								-	-
000059 (APE 59) Accidental Liquid Radwaste Release / 9								-	-
000060 (APE 60) Accidental Gaseous Radwaste Release / 9								-	-
000061 (APE 61) Area Radiation Monitoring System Alarms / 7								-	-
000067 (APE 67) Plant Fire On Site / 8						01-23	G2.1.23 - Ability to perform specific system and integrated plant procedures during all modes of plant operation. (CFR: 41.10 / 43.5 / 45.2 / 45.6)	4.4	83
000068 (APE 68; BW A06) Control Room Evacuation / 8								-	-
000069 (APE 69; ~~W E14~~) Loss of Containment Integrity / 5								-	-
000074 (EPE 74; ~~W E06 & E07~~) Inadequate Core Cooling / 4								-	-
000076 (APE 76) High Reactor Coolant Activity / 9								-	-
000078 (APE 78*) RCS Leak / 3								-	-
(W E01 & E02) Rediagnosis & SI Termination / 3							NOT APPLICABLE	-	-
(W E13) Steam Generator Overpressure / 4							NOT APPLICABLE	-	-
(W E15) Containment Flooding / 5							NOT APPLICABLE	-	-
(W E16) High Containment Radiation /9							NOT APPLICABLE	-	-
(BW A01) Plant Runback / 1								-	-
(BW A02 & A03) Loss of NNI-X/Y/7								-	-
(BW A04) Turbine Trip / 4								-	-
(BW A05) Emergency Diesel Actuation / 6					01		AA2.1 - Ability to determine and interpret the following as they apply to the (Emergency Diesel Actuation): Facility conditions and selection of appropriate procedures during abnormal and emergency operations. (CFR: 43.5 / 45.13)	4.2	84
(BW A07) Flooding / 8								-	-
(BW E03) Inadequate Subcooling Margin / 4								-	-
(BW E08; ~~W E03~~) LOCA Cooldown—Depressurization / 4					02		EA2.2 - Ability to determine and interpret the following as they apply to the (LOCA Cooldown): Adherence to appropriate procedures and operation within the limitations in the facility*s license and amendments. (CFR: 43.5 / 45.13)	4.0	85
(BW E09; ~~CE A13**; W E09 & E10~~) Natural Circulation/4								-	-
(BW E13 & E14) EOP Rules and Enclosures								-	-
(CE A11**; W E08) RCS Overcooling—Pressurized Thermal Shock / 4							NOT APPLICABLE	-	-
(CE A16) Excess RCS Leakage / 2							NOT APPLICABLE	-	-

(CE E09) Functional Recovery	[redacted]						NOT APPLICABLE	-	-
(CE E13*) Loss of Forced Circulation/LOOP/Blackout / 4							NOT APPLICABLE	-	-
K/A Category Point Totals:	0	0	0	0	2	2	Group Point Total:		4

ES-401 PWR Examination Outline Form ES-401-2
Plant Systems—Tier 2/Group 1 (SRO)

System # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G*	K/A Topic(s)	IR	#
003 (SF4P RCP) Reactor Coolant Pump								01				A2.01 - Ability to (a) predict the impacts of the following malfunctions or operations on the RCPS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Problems with RCP seals, especially rates of seal leak-off (CFR: 41.5 / 43.5/ 45.3 / 45/13)	3.9	86
004 (SF1; SF2 CVCS) Chemical and Volume Control													-	-
005 (SF4P RHR) Residual Heat Removal											04-46	G2.4.46 - Ability to verify that the alarms are consistent with the plant conditions. (CFR: 41.10 / 43.5 / 45.3 / 45.12)	4.2	87
006 (SF2; SF3 ECCS) Emergency Core Cooling													-	-
007 (SF5 PRTS) Pressurizer Relief/Quench Tank													-	-
008 (SF8 CCW) Component Cooling Water													-	-
010 (SF3 PZR PCS) Pressurizer Pressure Control													-	-
012 (SF7 RPS) Reactor Protection													-	-
013 (SF2 ESFAS) Engineered Safety Features Actuation								03				A2.03 - Ability to (a) predict the impacts of the following malfunctions or operations on the ESFAS; and (b) based Ability on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Rapid depressurization (CFR: 41.5 / 43.5 / 45.3 / 45.13)	4.7	88
022 (SF5 CCS) Containment Cooling													-	-
025 (SF5 ICE) Ice Condenser												NOT APPLICABLE	-	-
026 (SF5 CSS) Containment Spray								04				A2.04 - Ability to (a) predict the impacts of the following malfunctions or operations on the CSS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Failure of spray pump (CFR: 41.5 / 43.5 / 45.3 / 45.13)	3.9	89
039 (SF4S MSS) Main and Reheat Steam													-	-
059 (SF4S MFW) Main Feedwater													-	-
061 (SF4S AFW) Auxiliary/Emergency Feedwater											04-30	G2.4.30 - Knowledge of events related to system operation/status that must be reported to internal organizations or external agencies, such as the State, the NRC, or the transmission system operator. (CFR: 41.10 / 43.5 / 45.11)	4.1	90
062 (SF6 ED AC) AC Electrical Distribution													-	-
063 (SF6 ED DC) DC Electrical Distribution													-	-
064 (SF6 EDG) Emergency Diesel Generator													-	-
073 (SF7 PRM) Process Radiation Monitoring													-	-
076 (SF4S SW) Service Water													-	-
078 (SF8 IAS) Instrument Air													-	-
103 (SF5 CNT) Containment													-	-
K/A Category Point Totals:	0	0	0	0	0	0	0	3	0	0	2	Group Point Total:		5

ES-401	PWR Examination Outline Plant Systems—Tier 2/Group 2 (SRO)											Form ES-401-2	
System # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G*	K/A Topic(s)	IR	#
001 (SF1 CRDS) Control Rod Drive													-	-
002 (SF2; SF4P RCS) Reactor Coolant											02-44	G2.2.44 - Ability to interpret control room indications to verify the status and operation of a system, and understand how operator actions and directives affect plant and system conditions. (CFR: 41.5 / 43.5 / 45.12)	4.4	91
011 (SF2 PZR LCS) Pressurizer Level Control													-	-
014 (SF1 RPI) Rod Position Indication													-	-
015 (SF7 NI) Nuclear Instrumentation													-	-
016 (SF7 NNI) Nonnuclear Instrumentation								01				A2.01 - Ability to (a) predict the impacts of the following malfunctions or operations on the NNIS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Detector failure (CFR: 41.5 / 43.5 / 45.3 / 45.5)	3.1	92
017 (SF7 ITM) In-Core Temperature Monitor													-	-
027 (SF5 CIRS) Containment Iodine Removal												NOT APPLICABLE	-	-
028 (SF5 HRPS) Hydrogen Recombiner and Purge Control												NOT APPLICABLE	-	-
029 (SF8 CPS) Containment Purge													-	-
033 (SF8 SFPCS) Spent Fuel Pool Cooling													-	-
034 (SF8 FHS) Fuel-Handling Equipment													-	-
035 (SF 4P SG) Steam Generator											02-37	G2.2.37 - Ability to determine operability and/or availability of safety related equipment. (CFR: 41.7 / 43.5 / 45.12)	4.6	93
041 (SF4S SDS) Steam Dump/Turbine Bypass Control													-	-
045 (SF 4S MTG) Main Turbine Generator													-	-
055 (SF4S CARS) Condenser Air Removal													-	-
056 (SF4S CDS) Condensate													-	-
068 (SF9 LRS) Liquid Radwaste													-	-
071 (SF9 WGS) Waste Gas Disposal													-	-
072 (SF7 ARM) Area Radiation Monitoring													-	-
075 (SF8 CW) Circulating Water													-	-
079 (SF8 SAS**) Station Air													-	-
086 Fire Protection													-	-
050 (SF 9 CRV*) Control Room Ventilation												NOT APPLICABLE	-	-
K/A Category Point Totals:	0	0	0	0	0	0	0	1	0	0	2	Group Point Total:		3

Facility: **DAVIS-BESSE NUCLEAR POWER STATION** Date of Exam: **FEBRUARY 7-18, 2022**

Category	K/A #	Topic	RO		SRO-Only	
			IR	#	IR	#
1. Conduct of Operations	2.1.14	Knowledge of criteria or conditions that require plant-wide announcements, such as pump starts, reactor trips, mode changes, etc. (CFR: 41.10 / 43.5 / 45.12)	3.1	66		
	2.1.15	Knowledge of administrative requirements for temporary management directives, such as standing orders, night orders, Operations memos, etc. (CFR: 41.10 / 45.12)	2.7	67		
	2.1.36	Knowledge of procedures and limitations involved in core alterations. (CFR: 41.10 / 43.6 / 45.7)	3.0	68		
	2.1.13	Knowledge of facility requirements for controlling vital/controlled access. (CFR: 41.10 / 43.5 / 45.9 / 45.10)			3.2	94
	2.1.40	Knowledge of refueling administrative requirements. (CFR: 41.10 / 43.5 / 45.13)			3.9	95
	Subtotal			3		2
2. Equipment Control	2.2.6	Knowledge of the process for making changes to procedures. (CFR: 41.10 / 43.3 / 45.13)	3.0	69		
	2.2.14	Knowledge of the process for controlling equipment configuration or status. (CFR: 41.10 / 43.3 / 45.13)	3.9	70		
	2.2.41	Ability to obtain and interpret station electrical and mechanical drawings. (CFR: 41.10 / 45.12 / 45.13)	3.5	71		
	2.2.11	Knowledge of the process for controlling temporary design changes. (CFR: 41.10 / 43.3 / 45.13)			3.3	96
	2.2.20	Knowledge of the process for managing troubleshooting activities. (CFR: 41.10 / 43.5 / 45.13)			3.8	97
	Subtotal			3		2
3. Radiation Control	2.3.5	Ability to use radiation monitoring systems, such as fixed radiation monitors and alarms, portable survey instruments, personnel monitoring equipment, etc. (CFR: 41.11 / 41.12 / 43.4 / 45.9)	2.9	72		
	2.3.13	Knowledge of radiological safety procedures pertaining to licensed operator duties, such as response to radiation monitor alarms, containment entry requirements, fuel handling responsibilities, access to locked high-radiation areas, aligning filters, etc. (CFR: 41.12 / 43.4 / 45.9 / 45.10)	3.4	73		
	2.3.4	Knowledge of radiation exposure limits under normal or emergency conditions. (CFR: 41.12 / 43.4 / 45.10)			3.7	98
	Subtotal			2		1
4. Emergency Procedures / Plan	2.4.13	Knowledge of crew roles and responsibilities during EOP usage. (CFR: 41.10 / 45.12)	4.0	74		
	2.4.43	Knowledge of emergency communications systems and techniques. (CFR: 41.10 / 45.13)	3.2	75		
	2.4.21	Knowledge of the parameters and logic used to assess the status of safety functions, such as reactivity control, core cooling and heat removal, reactor coolant system integrity, containment conditions, radioactivity release control, etc. (CFR: 41.7 / 43.5 / 45.12)			4.6	99
	2.4.32	Knowledge of operator response to loss of all annunciators. (CFR: 41.10 / 43.5 / 45.13)			4.0	100
	Subtotal			2		2
Tier 3 Point Total				10		7